reliability^2

Technical manual

System board D1859 (Econel 50)

English

FUJITSU COMPUTERS SIEMENS

Are there ...

... any technical problems or other questions you need clarified?

Please contact:

- your sales partner
- your sales outlet
- our hotline for customers who have purchased the system board as a single delivery unit: +49(0) 180 3777 005

The latest information and updates (e.g. BIOS update) on our system boards can be found on the Internet under: *http://www.fujitsu-siemens.com*

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System board D1859

Your system board is available in different configuration levels. Depending on the configuration chosen, some of the hardware components described may not be available on your system board.

Additional information

Information on the *BIOS Setup* and additional descriptions of the drivers are contained:

- in the readme files on your hard disk
- on the “ServerView Suite” CDs (ServerBooks and ServerSupport)

The programme *Acrobat Reader* must be installed to be able to open the manuals. You will find the programme on the CD-ROM directory: utls/acrobat.

For more details please read the according readme.txt files.

Notational conventions

The meanings of the symbols and fonts used in this manual are as follows:

indicates information which is important for your health or for preventing physical damage.

indicates additional information which is required to use the system properly.

► Text which follows this symbol describes activities that must be performed in the order shown.

␣ This symbol indicates that you must enter a blank space (press the Space Bar) at this point.

☐ This symbol indicates that you must press the Enter key.

`Text in this typeface` indicates screen outputs.

`Text in this bold typeface` indicates the entries you make via the keyboard.

Text in italics indicates commands or menu items.

"Quotation marks" indicate names of chapters or terms.

Important notes

With the system board installed you must open the system to access the system board. How to dismantle and reassemble the system is described in the operating manual accompanying the system.

Connecting cables for peripherals must be adequately shielded to avoid interference.

Observe the safety notes in the operating manual of your system.

Incorrect replacement of the lithium battery may lead to a risk of explosion. It is therefore essential to observe the instructions in the "Add-on modules / Upgrading" - "Replacing the lithium battery" chapter.

Components can become very hot during operation. Ensure you do not touch components when making extensions to the system board. There is a danger of burns!

The shipped version of this board complies with the requirements of the EEC directive 89/336/EEC "Electromagnetic compatibility".

Compliance was tested in a typical server configuration.

When installing the board, refer to the specific installation information in the manual for the receiving device.

The warranty is invalidated if the system is damaged during the installation or replacement of expansions. Information on which expansions you can use is available from your sales outlet or the customer service centre.

Information about boards

To prevent damage to the system board, the components and conductors on it, please take great care when you insert or remove boards. Take great care to ensure that extension boards are slotted in straight, without damaging components or conductors on the system board, or any other components, for example EMI spring contacts.

Remove the plug from the mains outlet so that system and system board are totally disconnected from the mains voltage.

Be careful with the locking mechanisms (catches, centring pins etc.) when you replace the system board or components on it, for example memory modules or processors.

Never use sharp objects (screwdrivers) for leverage.

Boards with electrostatic sensitive devices (ESD) are identifiable by the label shown.

When you handle boards fitted with ESDs, you must, under all circumstances, observe the following:

- You must always discharge static build up (e.g. by touching a grounded object) before working.
- The equipment and tools you use must be free of static charges.
- Remove the power plug from the mains supply before inserting or removing boards containing ESDs.
- Always hold boards with ESDs by their edges.
- Never touch pins or conductors on boards fitted with ESDs.

List of features

Onboard features	D1859-A
Chipset	Intel 925
Board size	ATX
VGA	✓
Audio / 8-channel / S/PDIF 5.1	✓ / - / ✓
Buzzer / int. Speaker Support	- / ✓
LAN 1 Gbit / 100 Mbit / 10 Mbit	✓ / ✓ / ✓
LAN ASF / AOL / WOL / Boot	✓ / - / ✓ / ✓
Serial ATA / ATA / RAID	✓ / ✓ / ✓
FireWire™	-
USB 2.0	✓
Fan monitoring PSU** / CPU (FAN1) / AUX1 (FAN2) / AUX2 (FAN3)	✓ / ✓ / ✓ / ✓
Fan control PSU** / CPU (FAN1) / AUX1 (FAN2) / AUX2 (FAN3)	✓ / ✓ / ✓ / ✓
Temperature monitoring CPU/ONB1/ONB2/OFFB	✓ / ✓ / ✓ / -
SmartCard SystemLock (USB / serial)	✓ / -
Fujitsu Siemens Computers Keyboard Power Button Support	✓

Special onboard features

Silent Fan / Silent Fan LT	✓ / -
System Guard / Silent Drives	✓ / ✓
Recovery BIOS / Desk Update / Multi Boot / Safe Standby	✓ / ✓ / ✓ / ✓
HDD Password / USB Security	✓ / ✓
Logo Boot / Intel On Screen Branding	✓ / ✓

Internal ports

DIMM Sockets (DDR2 533)	4
PCI Express 8x / 1x	1 / 1
PCI slot (32 bit, 33 MHz and 3.3 V, Rev. 2.3)	5
Serial ATA interface (150 Mbyte/s)	4
ATA Interface (Ultra DMA/100)	1
Floppy interface	1

Internal ports (continued)	D1859-A
S/PDIF 5.1 (digital Audio)* OUT / IN	- / -
Audio Input	-
Front panel Audio (headphone, microphone, AC97)	-
IEEE 1394 connector* (FireWire™)	-
USB Ports* (2.0, ~480 Mbit/s)	4
Serial Ports* (RS232, FIFO, 16550 compatible)	-
Fan Connectors PSU** / CPU / AUX1 / AUX2	1 / 1 /1 / 1
SMBus Connector* (Case Temperature)	1
Cover monitoring* (Casing open)	1
BTX (24-pin) / ATX12V (4-pin) power supply	1 / 1

External ports

VGA	1
Audio Mic. In / Line in / Line out (or configurable with driver)	- / - / -
S/PDIF (digital audio, cinch)* OUT / IN	- / -
S/PDIF (digital audio, optical) OUT	-
LAN (RJ-45)	1
PS/2 mouse/keyboard	1 / 1
FireWire™ * (6-Pin, IEEE 1394 port)	-
USB Ports (2.0, ~480 Mbit/s)	4
Serial Ports (RS232, FIFO, 16550 compatible)	1
Parallel Port (EPP/ECP)	1

* for use with internal devices or optional Front or Rear panel

** not supported by standard power supplies

Brief instructions on installing system board

If you have purchased a separate system board, you can install the system board in your system in accordance with the following brief instructions.

The activities described here assume a basic knowledge of servers and cannot be carried out by a layperson. If you are not sure whether you have the necessary specialised knowledge, then leave this work to an expert.

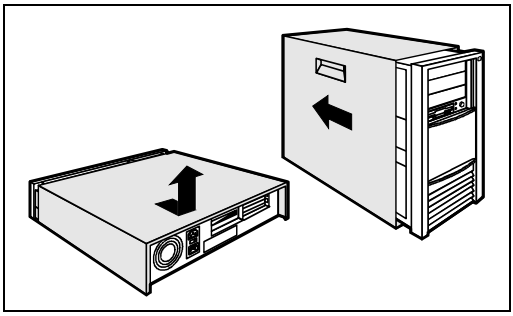
The illustrations of the system show examples of possible cases.

Prior to installation

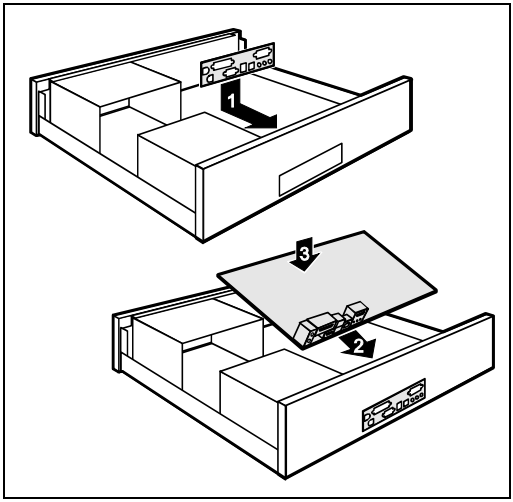
- ► Please take note of the safety information in the "Important notes" chapter.
- ► Check whether the processor, memory modules and power supply are suitable for this system board:
  - – processor (see "Installing and removing processors" chapter).
  - – memory modules (see "Upgrading main memory" chapter).
  - – power supply (see "Electrical Properties" chapter).
- ► Make sure the current requirement of the fans (processor, case) does not exceed the loadability of the fan connections (see chapter entitled "Electrical Properties").
- ► First only install the components absolutely necessary (graphics card, processor and heat sink, one memory module) and only connect the required connections (power supply unit, case connections such as ATX on/off switch, hard disk or floppy disk drive). You should not install additional cards and devices until this minimum configuration successfully boots (see chapter entitled "Add-on modules / Upgrading").

Installation

- ► Equip the system board with the processor, heat sink and memory modules before installation if possible. Further information can be found in "Installing processor with heat sink" chapter.



- ► Open the casing as described in the operating manual.



► Should no suitable connection field be provided in the case, then you must install the connection field (1) provided.

Ensure the plate is aligned properly so that the connections are suitable for the system board later.

► Set the system board on the edge on which the connection field is located (2) and then insert the board in the case (3).

Make sure that spacers in the housing are only mounted at points at which there are mounting holes in the system board.

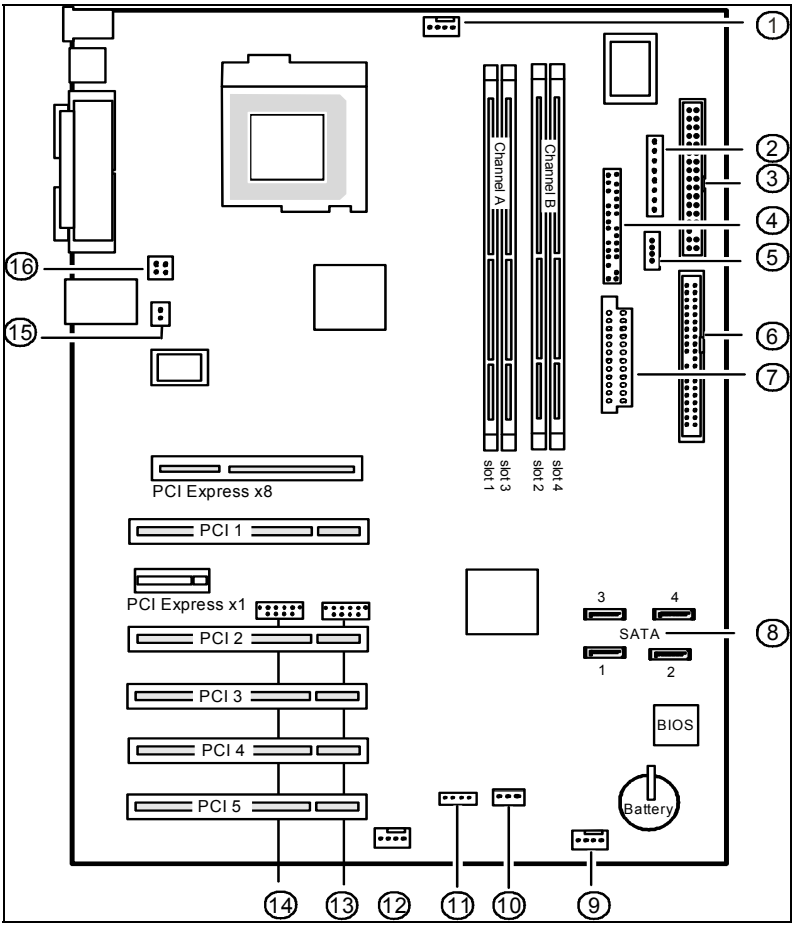
► Fasten the system board with the screws.

► Connect the plugs for the power supply, control panel and drives to the corresponding connections on the system board.

Driver installation

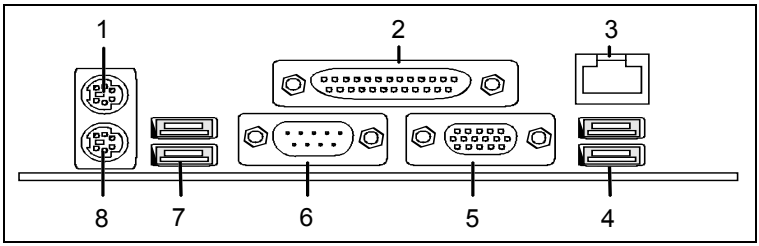
► Install the drivers for the chipset. You may find the driver on the "ServerStart” and “ServerSupport” CDs..

Interfaces and connectors



1	CPU fan (F1)	9	Fan connetor (F2)
2	PC98	10	Intrusion
3	Floppy disk drive	11	I^2C bus (SMB1)
4	Front panel	12	Fan connector (F3)
5	Extended HD-LED	13	USB1/2
6	IDE primary (IDE1/2)	14	USB3/4
7	ATX power 24pin (PWR1)	15	TPM jumper (optional)
8	Serial ATA 1-4	16	ATX power 4pin (PWR2)

External ports



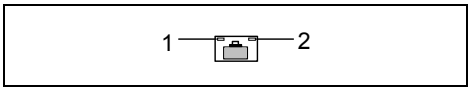
1	PS/2 mouse port	5	VGA port
2	Parallel port/printer	6	Serial interface COM1
3	LAN connector (10/100/1000 Mbit/s)	7	USB1 connector
4	USB0 connector	8	PS/2 keyboard board

LAN connector

The system board is optionally equipped with the Broadcom BCM5751 LAN controller. This LAN controller supports the transfer rates 10 Mbit/s, 100 Mbit/s and 1000 Mbit/s. The LAN controller supports the WOL functionality through Magic Packet™, Basic Alert-on-LAN II and ASF 2.0 (Alert Standard Format).

It is also possible to boot a device without its own boot hard disk via LAN. Here bootix® BootP and Intel PXE are supported.

The LAN RJ45 connector has two LEDs (light emitting diodes).



LED 1 lights green - a connection exists (e.g. to a hub). LED is blinking green: activity
LED 2 lights green or yellow:

Link Mode: the LAN connection is active.

10 Mbit/s	off
100 Mbit/s	green
1000 Mbit/s	yellow

Internal ports and connectors

The positions of the internal ports and connectors are shown on the Cover. Additional information on some ports is also provided here.

Hard disk connection

If you have connected hard disks to serial ATA (one hard disk is possible per serial ATA connection), you must configure the respective settings in the *BIOS Setup* (further information you can find in the *BIOS Setup* manual).

An ultra ATA/66 or ultra ATA/100 hard disk must be connected with a cable especially designed for the ultra ATA/66 or ultra ATA/100 mode.

► Connect the end of the cable marked with blue to the system board.

A serial ATA/150 hard disk must be connected with a serial ATA cable.

► Connect the cable to the hard disk and to the connector on the system board.

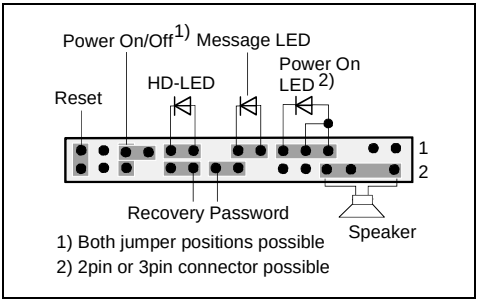
Pin assignment of internal ports

The pin assignment of some internal connections is shown in English in the following.

Some of the following connectors may be optional!

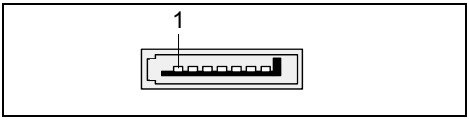
Front panel

Watch the poling of the LEDs. The positive pole of the connection cables is often indicated with a coloured wire.



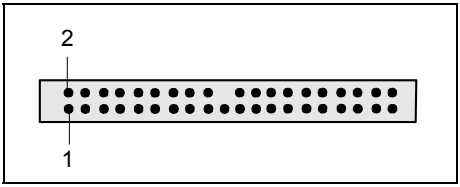
Connection	Note
Reset	Connector for reset switch
Power On/Off	Connection for ATX On/Off switch
HD LED	Indicates HDD (hard disk) activity
Message LED	Indicates system management error
Power On LED	Indicates the system state APM or ACPI
Recovery	see "**Fehler! Verweisquelle konnte nicht gefunden werden.**" chapter
Password	see "**Fehler! Verweisquelle konnte nicht gefunden werden.**" chapter
Speaker	0,5 W at 8 Ohm

Serial ATA



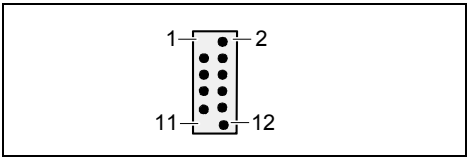
Pin	Signal	Pin	Signal
1	GND	2	Transmit data positive
3	Transmit data negative	4	GND
5	Receive data negative	6	Receive data positive
7	GND	8	Key

IDE/ATA interface



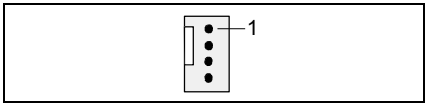
Pin	Signal	Pin	Signal
1	Reset drive (low asserted)	2	GND
3	Data 7 (high asserted)	4	Data 8 (high asserted)
5	Data 6 (high asserted)	6	Data 9 (high asserted)
7	Data 5 (high asserted)	8	Data 10 (high asserted)
9	Data 4 (high asserted)	10	Data 11 (high asserted)
11	Data 3 (high asserted)	12	Data 12 (high asserted)
13	Data 2 (high asserted)	14	Data 13 (high asserted)
15	Data 1 (high asserted)	16	Data 14 (high asserted)
17	Data 0 (high asserted)	18	Data 15 (high asserted)
19	GND	20	Key
21	DRQ (high asserted)	22	GND
23	I/O write (low asserted)	24	GND
25	I/O read (low asserted)	26	GND
27	I/O ready (low asserted)	28	Cable select
29	DAK (low asserted)	30	GND
31	IRQ (high asserted)	32	not connected
33	ADR 1 (high asserted)	34	ATA66 Detect (low asserted)
35	ADR 0 (high asserted)	36	ADR 2 (high asserted)
37	CS 1 (low asserted)	38	CS 3 (low asserted)
39	IDE-LED (low asserted)	40	GND

USB - dual channel



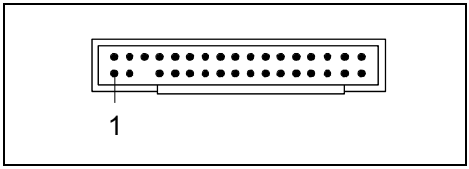
Pin	Signal	Pin	Signal
1	Key	2	Chipcardreader on or not connected
3	VCC 1 or 3	4	VCC 2 or 4
5	Data negative 1 or 3	6	Data negative 2 or 4
7	Data positive 1 or 3	8	Data positive 2 or 4
9	GND	10	GND
11	Key	12	not connected

Fan



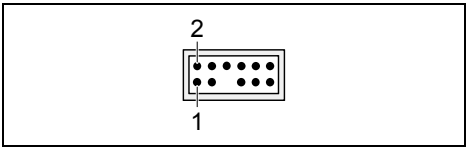
Pin	Signal
1	GND
2	+12 V
3	Fan sense
4	Fan Control

Floppy interface



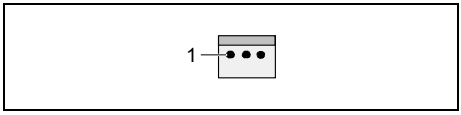
Pin	Signal	Pin	Signal
1	GND	18	Step DIR (low asserted)
2	FDHDIN (low asserted)	19	GND
3	GND	20	Step Pulse (low asserted)
4	not connected	21	GND
5	Key	22	Write Data (low asserted)
6	not connected	23	GND
7	GND	24	Write Enable (low asserted)
8	Index (low asserted)	25	GND
9	GND	26	Track 0 (low asserted)
10	Motor A Enable (low asserted)	27	GND
11	GND	28	Write Protect (low asserted)
12	Drive B Select (low asserted)	29	GND
13	GND	30	Read Data (low asserted)
14	Drive A Select (low asserted)	31	GND
15	GND	32	Side 1 Select (low asserted)
16	Motor B Enable (low asserted)	33	GND
17	GND	34	Disk Change (low asserted)

LCD display



Pin	Signal	Pin	Signal
1	SMB CLK	8	LAN Link Icon
2	GND	9	Harddisk Action Icon
3	SMB DATA	10	BMC Alert Icon
4	GND	11	Message Icon
5	Key	12	Sleep Icon
6	RFU Reserved for Future use	13	Power Icon
7	LAN Active Icon	14	P3V3P_DUAL

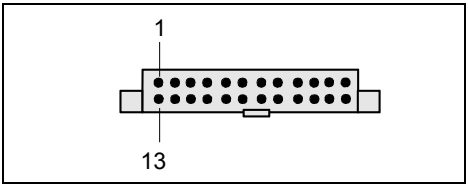
Intrusion



Pin	Signal
1	GND
2	Case open (low asserted)
3	Intrusion switch present (low asserted)

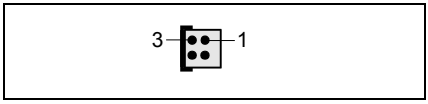
Power supply BTX

(ATX compatible)



Pin	Signal	Pin	Signal
1	+3.3 V (P3V3P)	13	+3.3 V (P3V3P)
2	+3.3 V (P3V3P)	14	-12 V (P12VN)
3	GND	15	GND
4	+5V (VCC)	16	PS on (low asserted)
5	GND	17	GND
6	+5V (VCC)	18	GND
7	GND	19	GND
8	Powergood (high asserted)	20	-5 V (P5VN)
9	+5 V Auxiliary (VCC Aux)	21	+5 V (VCC)
10	+12 V (P12VP)	22	+5 V (VCC)
11	+12 V (P12VP)	23	+5 V (VCC)
12		24	GND

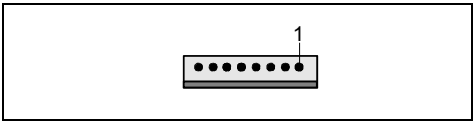
Additional power supply ATX12 V



Pin	Signal	Pin	Signal
1	GND	2	GND
3	+12 V	4	+12 V

Power supply control

(System monitoring)

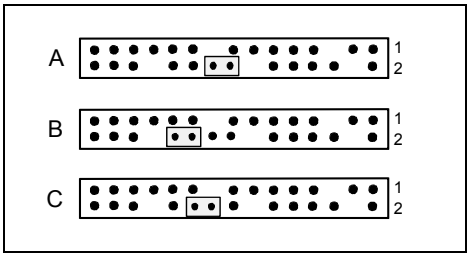


Pin	Signal
1	Power Guard Control
2	PS FAN Control
4	PS FAN Sense

Jumper settings

The positions of the jumpers are shown on page "Cover".

Setting via control-panel plug connector



Pin pair A inserted =
Skipping system and BIOS Setup password

Pin pair B inserted = System BIOS recovery

Pin pair C inserted = factory setting

i Please pay attention on the exact position of the pin pairs!

Skipping system and BIOS Setup password - pinpair A

Pinpair A enables skipping the system and BIOS Setup password.

Inserted System and BIOS Setup password are skipped when the device is switched on and may be changed.

Not inserted System and BIOS Setup password must be entered when the device is switched on.

Recovering System BIOS - pinpair B

Pinpair B enables recovery of the old system BIOS after an attempt to update has failed. To restore the old BIOS you need a Flash BIOS Diskette (see "BIOS update" chapter).

Inserted The System BIOS executes from floppy drive A: and the inserted "Flash-BIOS-Diskette" restores the System BIOS on the system board.

Not inserted Normal operation (default setting).

Add-on modules / Upgrading

Exit energy-saving mode, switch off the system and remove the power plug from the mains outlet, before carrying out any of the procedures described in this chapter!
Even when you have run down the device, parts of the device (e.g. memory modules, PCI extension boards) are still energised.

Installing and removing processors

Technical data

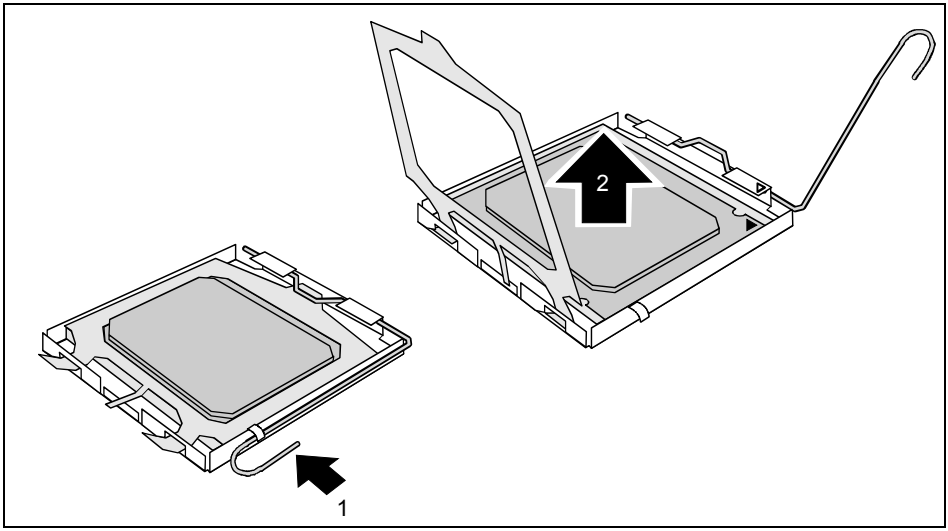
- Intel Pentium 4 with 800 MHz front side bus (FSB) in the LGA775 design.
- A current list of the processors supported by this system board is available in the service documentation.

Installing processor with heat sink

Never touch the underside of the processor. Even minor soiling such as grease from the skin can impair the processor's operation or destroy the processor.

Place the processor in the socket with extreme care, as the spring contacts of the socket are very delicate and must not be bent.

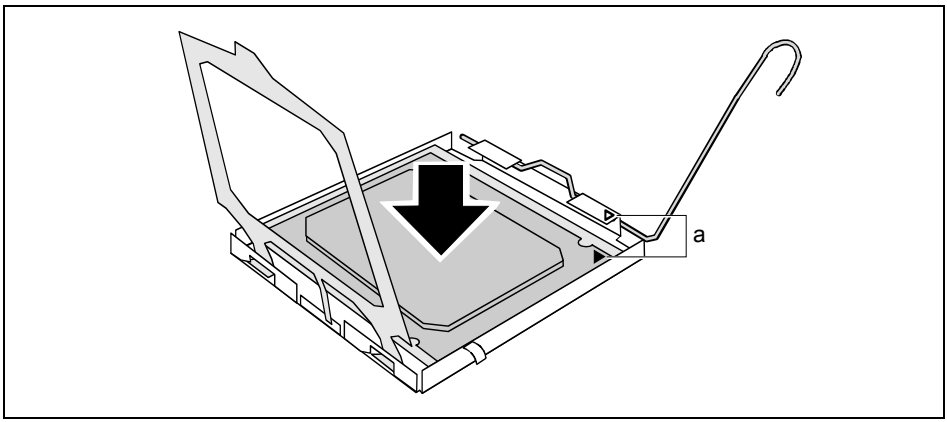
► Remove the heat sink.



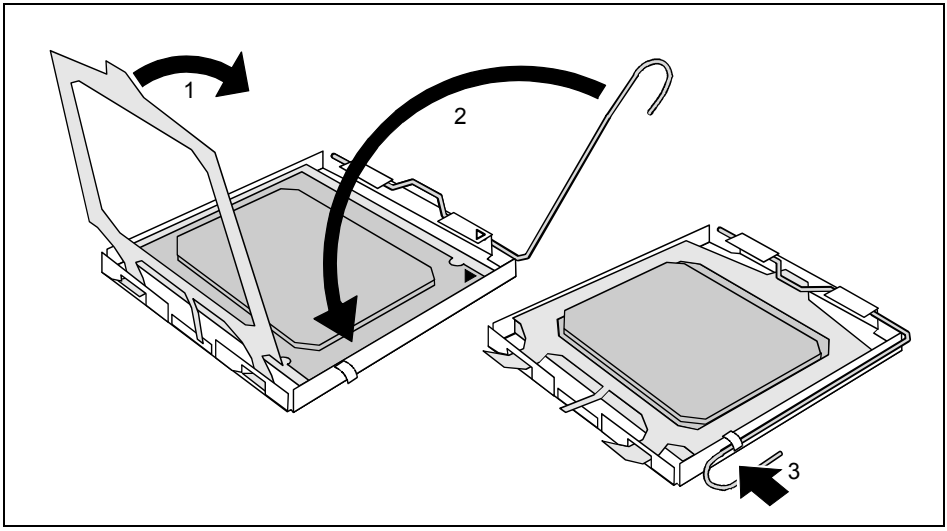
► Press down the lever (1) and unhook it.

► Fold up the frame.

► Remove the old processor (2) from the socket.



► Insert the new processor in the socket so that the marking of the processor is aligned with the marking on the socket (a).



► Fold down the frame (1).

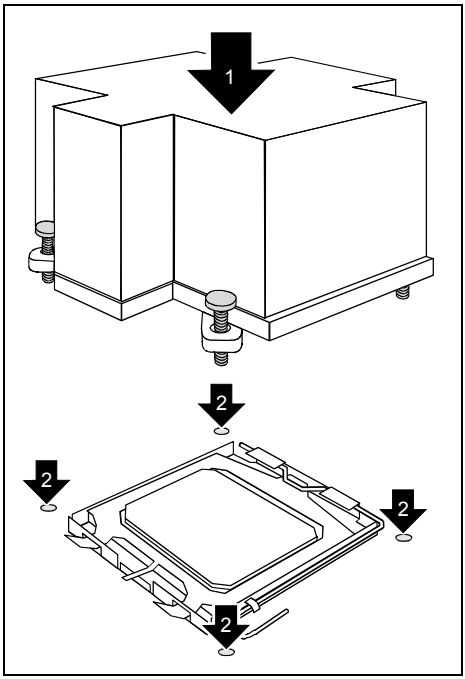
► Press the lever downward (2) until it is hooked in again (3).

Mounting heat sink

Use only the heat sink supplied with your system!

Be sure to use heat conducting material between the processor and the heat sink. If a heat conducting pad (rubber-like foil) is already applied to the heat sink, then use it. Otherwise you must apply a very thin layer of heat conducting paste.

Heat conducting pads can only be used once. If you remove the heat sink, you must clean it and apply new heat conducting paste before you remount it.



- ► Depending on the configuration variant, you must pull a protective foil off the heat sink or coat the heat sink with heat conducting paste before fitting it.
- ► Secure the heat sink - depending on the model - with four screws or push it into the mounts.

Upgrading main memory

Technical data

Technology: DDR2 400 / DDR2 533 unbuffered DIMM modules
184-Pin; 1.8 V; 64 Bit, with ECC

Size: 256 Mbytes to 4 Gbytes DDR2

Granularity: 256, 512 or 1024 Mbyte for one socket

A current list of the memory modules recommended for this *system board* is available on the Internet at: *www.fujitsu-siemens.com.*

At least one memory module must be installed. Memory modules with different memory capacities can be combined.

You may only use unbuffered 1,8 V memory modules with ECC.

DDR2 memory modules must meet the PC3200 or PC4300 specification.

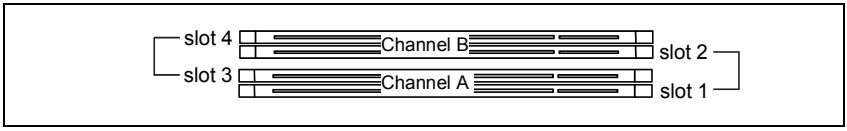
The system board has two memory channels (channel A and channel B) with two slots each (slot 1 and 3 or slot 2 and 4).

If you use more than one memory module, then make sure to distribute the memory modules over both memory channels. By doing this you use the performance advantages of the dual-channel mode.

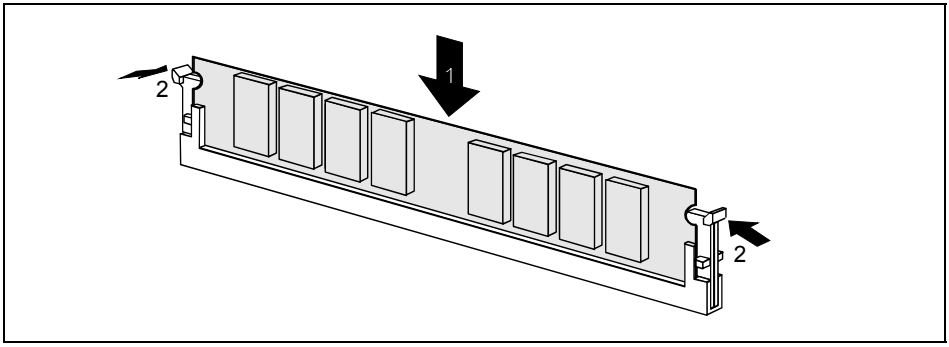
The maximum system performance is given when the same memory size is used in Channel A and Channel B.

To simplify equipping, the slots are colour coded.

With a memory configuration of 4 Gbytes the visible and usable main memory can be reduced down to 3 Gbytes (depending on the system configuration).

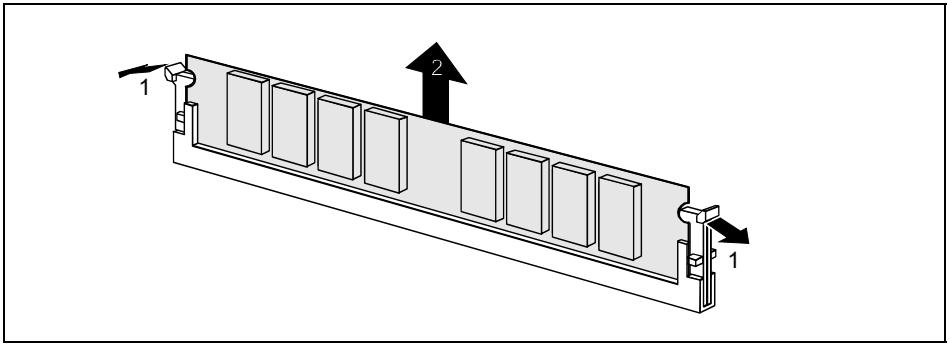


Installing a memory module



- ► Push the holders on each side of the memory slot outwards.
- ► Insert the memory module into the location (1).
- ► At the same time flip the lateral holders upwards until the memory module snaps in place (2).

Removing a memory module



- ► Push the clips on the right and left of the memory slot outward (1).
- ► Pull the memory module out of the memory slot (2).

Adding PCI Express cards

The PCI Express x8 slot is intended for graphics cards, and the PCI Express x1 slot for PCI Express x1 cards.

Adding PCI cards

Technical data:

32 bit / 33 MHz PCI slots
3.3 V supply voltage (PCI 2.3 compliant)
3.3 V auxiliary voltage

PCI bus interrupts - Selecting correct PCI slot

To achieve optimum stability, performance and compatibility, avoid the multiple use of ISA IRQs or PCI IRQ Lines (IRQ sharing). Should IRQ sharing be unavoidable, then all involved devices and their drivers must support IRQ sharing.

PCI IRQ Lines connect PCI/PCI Express slots and onboard components to the interrupt controller. IRQ Lines are permanently wired on the *system board*.

Which ISA IRQs are assigned to the PCI IRQ Lines is normally automatically specified by the BIOS (see description in "BIOS Setup").

Monofunctional expansions cards:

PCI/PCI Express expansion cards require a maximum of one interrupt, which is called the PCI interrupt INT A. Expansion cards that do not require an interrupt can be installed in any desired slot.

Multifunctional expansion cards or expansion cards with integrated PCI-PCI bridge:

These expansion cards require up to four PCI interrupts: INT A, INT B, INT C, INT D. How many and which of these interrupts are used is specified in the documentation provided with the card.

The assignment of the PCI interrupts to the IRQ Lines is shown in the following table:

PCI INT LINE	Controller or slot INT													
	On board controller							Mechanical slot						
								1	2	3	4	5	6	7
	USB 1.1										Slot PCI			
	1st	2nd	3rd	4th	USB 2.0	SMBus	LAN	PCIe x8	PCI Slot 1	PCIe x1	2	3	4	5
1 (A)	–		–	–	–	–	–	A	–	C	–	–	–	–
2 (B)	–	–	–	–	–	–	–	B	–	D	–	–	–	A
3 (C)	–	–	–	–	–	–	X	–	D	A	C	A	D	B
4 (D)	–	–	–	–	–	X	–	–	C	B	D	B	A	C
5 (E)	–	–	–	X	–	–	–	–	–	–	–	–	–	–
6 (F)	–	–	X	–	–	–	–	–	B	–	A	C	B	D
7 (G)	–	X	–	–	–	–	–	–	A	–	B	D	C	–
8 (H)	X	–	–	–	X	–	–	–	–	–	–	–	–	–

Use first PCI/PCI Express slots that have a single PCI IRQ Line (no IRQ sharing). If you must use another PCI/PCI Express slot with IRQ sharing, check whether the expansion card properly supports IRQ sharing with the other devices on this PCI IRQ Line. The drivers of all cards and components on this PCI IRQ Line must also support IRQ sharing.

Replacing the lithium battery

In order to permanently save the system information, a lithium battery is installed to provide the CMOS-memory with a current. A corresponding error message notifies the user when the charge is too low or the battery is empty. The lithium battery must then be replaced.

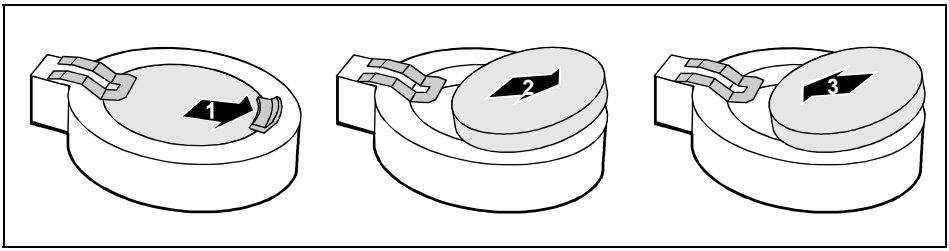
Incorrect replacement of the lithium battery may lead to a risk of explosion!

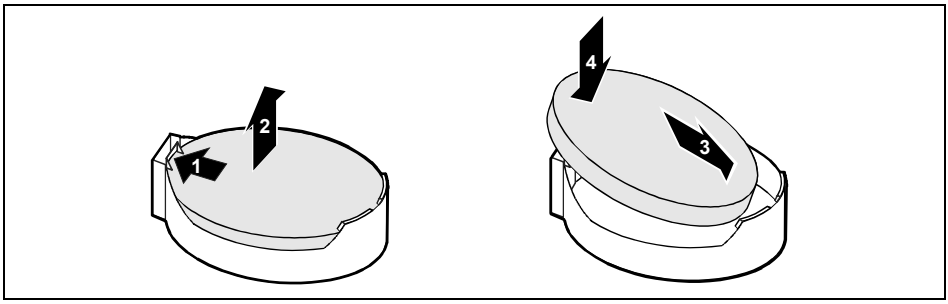
The lithium battery may be replaced only with an identical battery or with a type recommended by the manufacturer.

Do not throw lithium batteries into the household waste. They must be disposed of in accordance with local regulations concerning special waste.

Make sure that you insert the battery the right way round. The plus pole must be on the top!

The lithium battery holder exists in different designs that function in the same way.





- ► Press the locking lug in the direction of the arrow; the battery jumps somewhat out of the holder (1).
- ► Remove the battery (2).
- ► Push the new lithium battery of the identical type into the holder (3) and press it downward until it engages (4).

BIOS update

When should a BIOS update be carried out?

Fujitsu Siemens Computers makes new BIOS versions available to ensure compatibility to new operating systems, new software or new hardware. In addition, new BIOS functions can also be integrated.

A BIOS update should always also be carried out when a problem exists that cannot be solved with new drivers or new software.

Where can I obtain BIOS updates?

The BIOS updates are available on the Internet at *www.fujitsu-siemens.de/support*.

BIOS update under DOS with bootable BIOS update floppy disk - brief description

- ► Download the update file from out website to your server.
- ► Insert an empty floppy disk (1.44 MB).
- ► Run the update file (e.g. *1858103.EXE*).
- ► A bootable update floppy disk is created. Leave this floppy disk in the drive.
- ► Restart the server.
- ► Follow the instructions on screen.

BIOS Recovery - Recovering System BIOS

i All BIOS settings are reset to the default values.

- ► Open the casing as described in the operating manual.
- ► On the *system board* set the jumper to the appropriate setting to restore the system BIOS (see chapter "Jumper settings").
- ► Close the casing as described in the operating manual.
- ► Insert a BIOS update floppy disk and start the server.
- ► Note the signals issued from the loudspeaker. You have successfully restored the BIOS if you hear the signal sequence "short-short- long- long- long" and the diskette access indicator is dark. This can take a few minutes.
- ► Open the casing as described in the operating manual.
- ► Restore the switch or jumper settings.
- ► Close the casing as described in the operating manual.
- ► Remove the floppy disk from the drive.
- ► Start the server and invoke *BIOS Setup*.
- ► Select the menu item *Reset Configuration* in the menu *Advanced* and change the setting to *Yes*.
- ► Save the change and terminate *BIOS Setup*.

The BIOS recovery has now been completed. The system restarts.

i Detailed information on the BIOS recovery is contained in the manual "BIOS Setup" ("ServerBooks" CD).

Microcode Update

What is a microcode update?

As there are no drivers for processors, Intel offers the possibility from the P6 family (Pentium Pro) on to update the command set (microcode) of the processor. This enables minor errors to be corrected and the performance to be increased.

To guarantee the best possible performance and error-free operation, Intel recommends updating the microcode for every new processor. Intel refers to the use of the processor without microcode updates as operation outside the specifications.

Safety for processor on Fujitsu Siemens Computers system boards

If the processor uses an old or incorrect microcode, error-free operation cannot be ensured. Fujitsu Siemens Computers has therefore implemented a function on its system boards that interrupts the booting process if no suitable microcode is available for the installed processor. The output error message is

`Patch for installed CPU not loaded. Please run the bios flash update diskette.`

This message appears until the microcode update has been carried out. If the computer is nevertheless operated without a microcode update, error-free operation is not ensured.

When should a microcode update be carried out?

A microcode update should be carried out after the installation of a new processor.

In contrast to the BIOS update, only an updated version of the processor command set is stored. The system BIOS remains unaffected by this.

Microcode update under DOS with bootable microcode update floppy disk - brief description

- ► Download the update file from out website to your server.
- ► Insert an empty floppy disk (1.44 MB).
- ► Run the update file under DOS (e.g. *1858101.EXE*).
- ► A bootable update floppy disk is created. Leave the floppy disk in the drive.
- ► Restart the server.
- ► Follow the instructions on screen.

To determine whether the latest microcode update has been loaded, the so-called Patch-ID of the processor can be read out.

- ► Press the **F1** key in the *BIOS Setup*.

The entry *CPU / Patch ID* is shown on the displayed information page.

A list with the current processors and the related Patch-IDs is available on the Internet.

If the processor is not recognised, you also require the microcode update tool for processors of the P6 family.

Annex

System board Revision and BIOS Version

System board Revision

The revision status of the system board exactly identifies which system board you have. It is indicated on a sticker on the edge of the system board:

D1859-A10 GS 1

05618476

Example System board revision

BIOS version

The BIOS version can be displayed in the *BIOS Setup*.

► Press **F2** during booting to open the *BIOS Setup*.

► Press **F1**.

The BIOS version is specified on the displayed information page under the entry *BIOS Release*.

Electrical Properties

Loadability for connections and fuses

Make sure that the connected devices do not overload the connections.

Fuse no.	Fuse	Connection	Maximum loadability
1	750 mA	Keyboard	Not specified
		Mouse	Not specified
2	2000 mA	USB port 1	500 mA
		USB port 2	500 mA
		USB port 3	500 mA
		USB port 4	500 mA
3	2000 mA	USB port 5	500 mA
		USB port 6	500 mA
		USB port 7	500 mA
		USB port 8	500 mA

The fuses on this system board can be used several times (polyfuses). Shortly after the error state has been eliminated, the fuses reset to the original state.

Error messages

This chapter contains error messages generated by the system board.

```
Available CPUs do not support the same bus frequency - System halted!
Memory type mixing detected
Non Fujitsu Siemens Memory Module detected - Warranty void
There are more than 32 RDRAM devices in the system
```

Check whether the system configuration has changed. If necessary, correct the settings.

```
BIOS update for installed CPU failed
```

This message appears if the microcode update required for the connected processor is not contained in the system BIOS.

► Boot the system with the inserted *Flash BIOS floppy disk*.

► Abort the normal Flash BIOS update by answering the question about whether you want to perform the update with

n ↵

► To carry out the Flash BIOS update for the processor, enter:

flashbio++/p6 ↵

```
Check date and time settings
```

The system date and time are invalid. Set the current date and time in the *Main* menu of the *BIOS Setup*.

```
CPU ID 0x failed
```

Switch the server off and on again. If the message is still displayed, go into the *BIOS setup* and set the corresponding processor to *Disabled* in the *Server - CPU Status* menu; please contact your sales outlet or customer service centre.

```
CPU mismatch detected
```

You have replaced the processor or changed the frequency setting. As a result, the characteristic data of the processor have changed. Confirm this change by running the *BIOS Setup* and exiting it again.

```
Diskette drive A error
Diskette drive B error
```

Check the entry for the diskette drive in the *Main* menu of the *BIOS Setup*. Check the connections to the diskette drive.

```
DMA test failed
EISA CMOS not writable
Extended RAM Failed at offset: nnnn
Extended RAM Failed at address line: nnnn
Failing Bits: nnnn
Fail-Safe Timer NMI failed
Multiple-bit ECC error occurred
Memory decreased in size
Memory size found by POST differed from EISA CMOS
Single-bit ECC error occurred
Software NMI failed
System memory exceeds the CPU’s caching limit
System RAM Failed at offset: nnnn
Shadow RAM Failed at offset: nnnn
```

Switch the device off and on again. If the message is still displayed, please contact your sales outlet or customer service centre.

```
Failure Fixed Disk 0
Failure Fixed Disk 1
Fixed Disk Controller Failure
```

Check the entry for the hard disk drive in the *Main* menu and the entry for the IDE drive controller in the *Advanced - Peripheral Configuration* menu of the *BIOS Setup*. Check the hard disk drive's connections and jumpers.

```
Incorrect Drive A - run SETUP
Incorrect Drive B - run SETUP
```

Correct the entry for the diskette drive in the *Main* menu of the *BIOS Setup*.

```
Invalid NVRAM media type
```

Switch the device off and on again. If the message is still displayed, please contact your sales outlet or customer service centre.

```
Invalid System Configuration Data
```

In the *Advanced* menu of the *BIOS Setup* set the entry *Reset Configuration Data* to *Yes*.

```
Invalid System Configuration Data - run configuration utility
Press F1 to resume, F2 to Setup
```

This error message may be displayed if the machine was switched off during system start-up.

Call *BIOS Setup* and switch to the *Advanced* menu. Select the menu item *Reset Configuration Data* and change the setting to *Yes*. Save the change and terminate *BIOS Setup*. Reboot the device.

```
Keyboard controller error
```

Connect another keyboard or another mouse. If the message is still displayed, please contact your sales outlet or customer service centre.

```
Keyboard error
```

Check that the keyboard is connected properly.

`Keyboard error nn`
`nn Stuck Key`

Release the key on the keyboard (*nn* is the hexadecimal code for the key).

`Missing or invalid NVRAM token`

Switch the device off and on again. If the message is still displayed, please contact your sales outlet or customer service centre.

`Monitor type does not match CMOS - RUN SETUP`

Correct the entry for the monitor type in the *Main* menu of the *BIOS Setup*.

`On Board PCI VGA not configured for Bus Master`

In the *BIOS Setup*, in the *Advanced* menu, submenu *PCI Configuration*, set the *Shared PCI Master Assignment* entry to *VGA*.

`One or more RDRAM devices are not used`
`One or more RDRAM devices have bad architecture/timing`
`One or more RDRAM devices are disabled`

Contact your system administrator or contact our customer service centre.

`Operating system not found`

Check the entries for the hard disk drive and the floppy disk drive in the *Main* menu and the entries for *Boot Sequence* submenu of the *BIOS Setup*.

`Parity Check 1`
`Parity Check 2`

Switch the device off and on again. If the message is still displayed, please contact your sales outlet or customer service centre.

`Previous boot incomplete - Default configuration used`

By pressing function key **F2** you can check and correct the settings in *BIOS Setup*. By pressing function key **F1** the system starts with incomplete system configuration. If the message is still displayed, please contact your sales outlet or customer service centre.

`Real time clock error`

Call the *BIOS Setup* and enter the correct time in the *Main* menu. If the message is still displayed, please contact your sales outlet or customer service centre.

`System battery is dead - Replace and run SETUP`

Replace the lithium battery on the system board and redo the settings in the *BIOS Setup*.

`System Cache Error - Cache disabled`

Switch the device off and on again. If the message is still displayed, please contact your sales outlet or customer service centre.

`System CMOS checksum bad - Default configuration used`

Call the *BIOS Setup* and correct the previously made entries or set the default entries.

`System Management Configuration changed or Problem occurred`

A system fan or system sensor has failed. Check the hardware operation.

`System timer error`

Switch the device off and on again. If the message is still displayed, please contact your sales outlet or customer service centre.

`Uncorrectable ECC DRAM error`
`DRAM Parity error`
`Unknown PCI error`

Switch the device off and on again. If the message is still displayed, please contact your sales outlet or customer service centre.

`Verify CPU frequency selection in Setup`

The frequency setting for the processor is invalid. Correct the *BIOS Setup* and the setting.

Glossary

The technical terms and abbreviations given below represent only a selection of the full list of common technical terms and abbreviations.
Not all technical terms and abbreviations listed here are valid for the described system board.

AC'97	Audio Codec '97
ACPI	Advanced Configuration and Power Management Interface
AOL	Alert On LAN
APM	Advanced Power Management
ATA	Advanced Technology Attachment
BIOS	Basic Input Output System
BMC	Baseboard management controller
CAN	Controller Area Network
CPU	Central Processing Unit
DIMM	Dual Inline Memory Module
ECC	Error Correcting Code
EEPROM	Electrical Erasable Programmable Read Only Memory
FDC	Floppy disk controller
FIFO	First-In First-Out
FSB	Front Side Bus
FWH	Firmware Hub
GMCH	Graphics and Memory Controller Hub
GPA	Graphics Performance Accelerator
I^2C	Inter Integrated Circuit
IAPC	Instantly Available Power Managed Desktop PC Design
ICH	I/O Controller Hub
IDE	Intelligent Drive Electronics

IPSEC	Internet Protocol Security
LAN	Local Area Network
LSA	LAN Desk Service Agent
MCH	Memory Controller Hub
MMX	MultiMedia eXtension
P64H	PCI64 Hub
PCI	Peripheral Component Interconnect
PCI Express	Peripheral Component Interconnect Express
PXE	Preboot eXecution Environment
RAM	Random Access Memory
RAMDAC	Random Access Memory Digital Analogue Converter
RTC	Real Time Clock
SATA	Serial Advanced Technology Attachment
SB	Soundblaster
SDRAM	Synchronous Dynamic Random Access Memory
SIMD	Streaming Mode Instruction (**S**ingle **I**nstruction **M**ultiple **D**ata)
SMBus	System Management Bus
SVGA	Super Video Graphic Adapter
USB	Video Graphic Adapter
WOL	Wake On LAN

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